Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Cave Spring Branch

Waterbody Segment at a Glance:

County: McDonald
Nearby Cities: Noel, Southwest City
Length of impairment: 0.2 miles
Pollutant: Nutrients
Source: Nonpoint Sources and Simmons Foods, Inc.


State map showing location of watershed

TMDL Priority Ranking: Medium

Description of the Problem

Beneficial uses of Cave Spring Branch

- This stream is not classified so no beneficial uses are assigned to it; however, all waterbodies in Missouri are protected by the general criteria (standards) contained in Missouri's Water Quality Standards (WQS), 10 CSR 20-7.031.

Use that is impaired

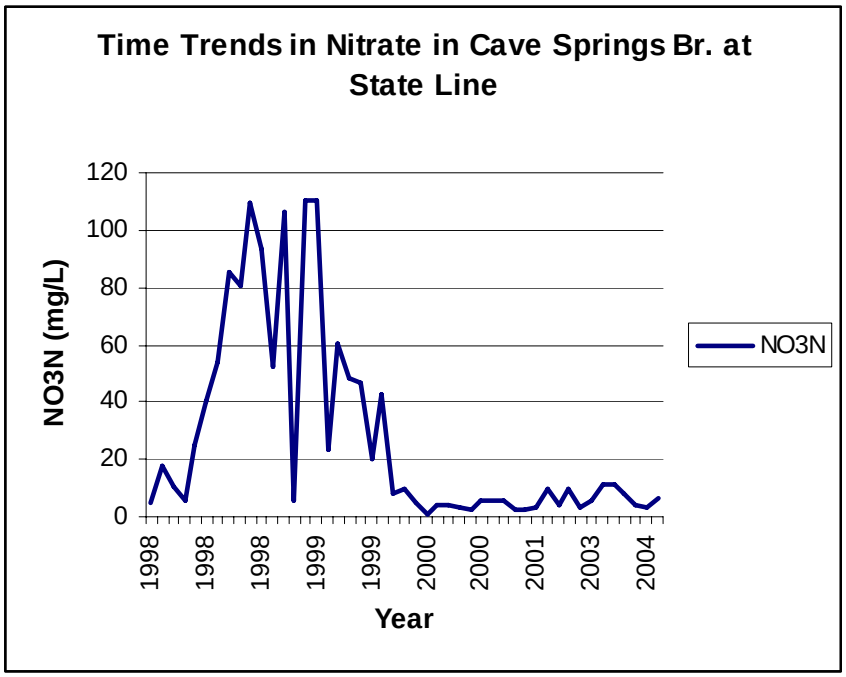
- None, since no beneficial uses can be assigned.

Standards that apply

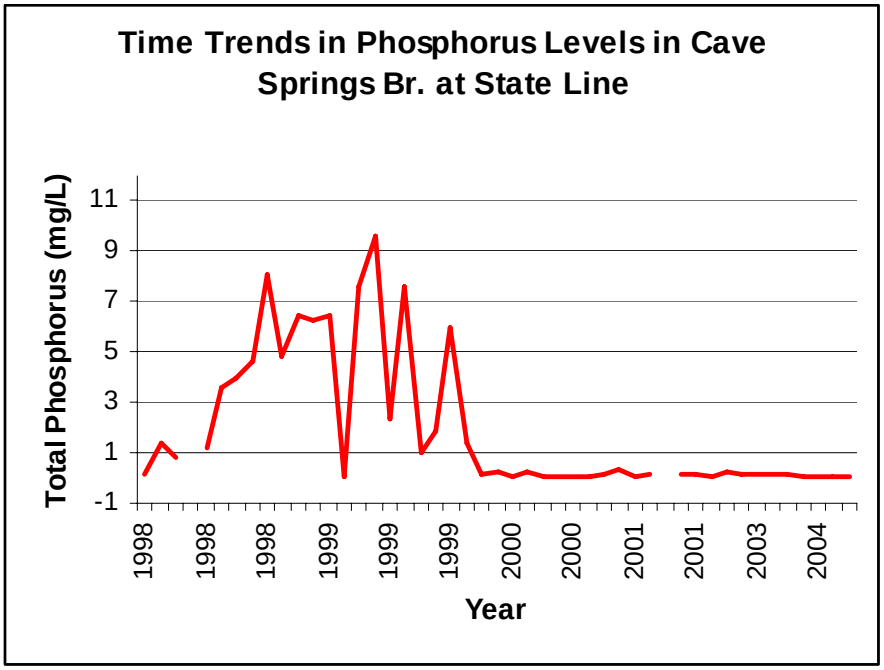
- The general criteria that apply in this case WQS 10 CSR 20-7.031 (3)(A), (C) and (G), which state:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.
  - Waters shall be free from conditions harmful to aquatic life (paraphrased).

Throughout much of the 1990s, Cave Spring Branch suffered several episodes of very poor water quality due to malfunctions of the wastewater treatment facilities at the Simmons poultry processing plant. Of particular concern were occasional acutely toxic levels of ammonia during times of treatment plant malfunction. Also, chronic problems with high levels of nitrogen and phosphorus stimulated excessive algae growth in Cave Springs Branch. By 1999, improvements to the wastewater treatment facilities had improved water quality in Cave Spring Branch. However, the combination of nutrient discharges from this facility and nutrients reaching the creek due to the application of poultry litter in the watershed is still responsible for abnormally high levels of nutrients in Cave Spring Branch.

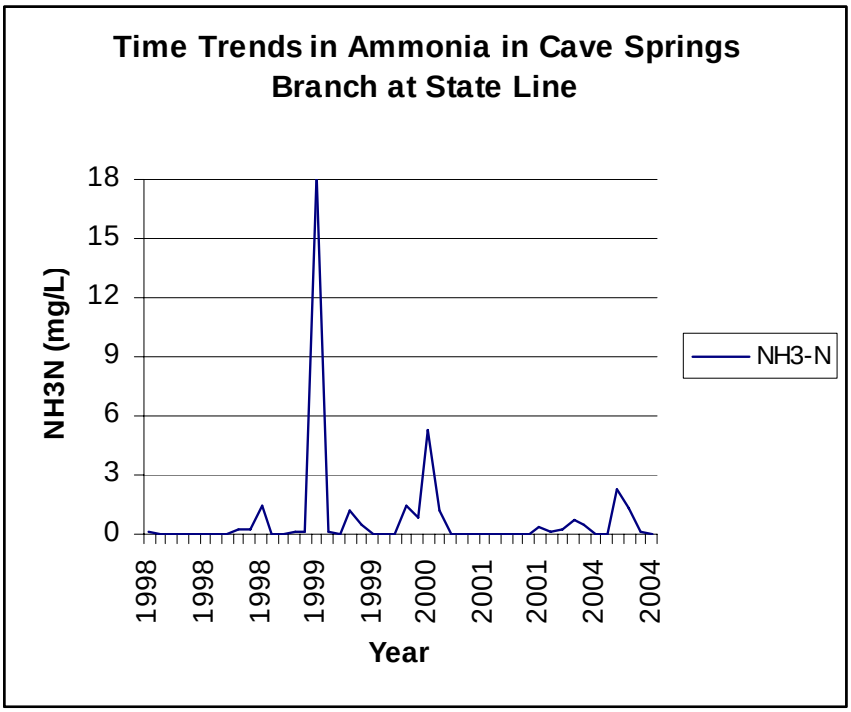
Elevated levels of nutrients can stimulate excess production of benthic (bottom growing) algae, which in turn can adversely affect fish and other aquatic animals in the stream by clogging better habitat and causing low levels of dissolved oxygen. A summary of the data collected by the department since early 1998 is included in the three graphs below.



The worst water quality problems in Cave Spring Branch occurred prior to 1998. Data collected since that time show large reductions in the levels of nitrate nitrogen (NO_3N) and total phosphorus in Cave Springs Branch beginning in late 1999.



Ammonia as nitrogen (NH_3N) levels in Cave Spring Branch, with the exception of one sampling period in 1999, have been well below levels that cause acute toxicity.



For more information call or write:
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-1300 office
(573) 522-9920 fax
Program Home Page: www.dnr.mo.gov/env/wpp/index.html